ABSTRACT OF THE DISCLOSURE

It is arranged such that displacement sensors (70) are installed at a position in or vicinity of elastic members (382), to generate outputs indicating a displacement of the floor contact end of a foot (22) relative to a second joint (18, 20), and a floor reaction force acting on the foot is calculated based on the outputs of the displacement sensors by using a model describing a relationship between the displacement and stress generated in the elastic members in response to the displacement, thereby enabling to achieve accurate calculation of the floor reaction force and more stable walking of a legged mobile robot (1). Further, a dual sensory system is constituted by combining different types of detectors, thereby enabling to enhance the detection accuracy. Furthermore, since it self-diagnoses whether abnormality or degradation occurs in the displacement sensors etc. and performs temperature compensation without using a temperature sensor, the detection accuracy can be further enhanced.